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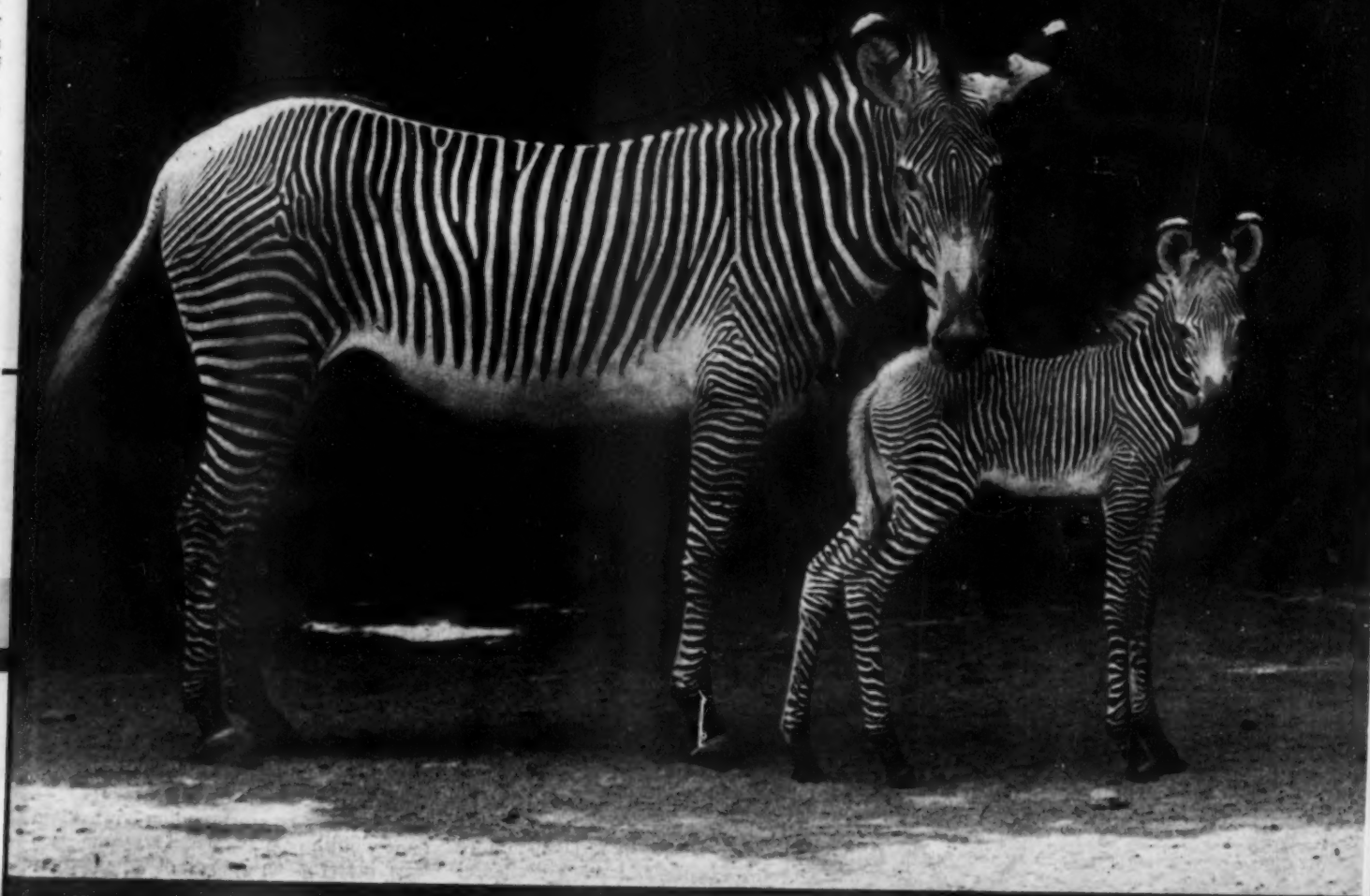
February 16, 1952

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Baby Grevy's Zebra

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A SCIENCE SERVICE PUBLICATION

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VOL. 61 NO. 7 PAGES 97-112

SURGERY

Man Lives Minus Pituitary

Daring attack on cancer launched by doctor's removal of pituitary gland of 72-year-old patient who now walks, "maintained" on small daily doses of cortisone.

➤ WALKING ABOUT in "fine" condition today is a 72-year-old patient who is helping doctors with a daring attack on cancer through the pituitary, "master gland" of the body.

Last November the patient was brought to the Johns Hopkins Hospital, Baltimore, bedridden and in extreme pain from far-advanced cancer in his prostate gland which had spread to his bones. Instead of trying to control the cancer by castration, or by treatment with female sex hormone which is a kind of chemical castration, or by the still newer method of removing both adrenal glands, the doctors decided to remove the pituitary because this gland influences all other glands in the body.

The operation was performed by Dr. A. Earl Walker, a neurosurgeon. The story of this master gland attack on cancer was told by Dr. W. W. Scott of the Hospital's Brady Urological Institute to surgeons celebrating the hundredth anniversary of the birth of William Stewart Halstead, first professor of surgery at Hopkins and one of America's most distinguished surgeons.

Since the operation, the patient has been "maintained" on small daily doses of cortisone, adrenal gland hormone famous as an arthritis remedy. He is completely rid of pain, sleeps soundly, has a good appetite, has gained 17 pounds and shows return of strength. Five doctors who examine him regularly report that the large, hard prostate gland had softened and shrunk substantially.

Many other attempts have been made elsewhere to remove the pituitary gland, but the patients usually died on the operating table or a short time after. A patient treated by this operation in San Francisco a year ago survived for almost two months, but during this period he literally slept his life away.

Dr. Scott stressed that the pituitary operation is not a cancer cure or even the preferred treatment for patients who can be helped by other methods. The pituitary operation is considered purely experimental but the results in this case encourage him and his colleagues to try it in a few more far-advanced prostate cancer cases. Apart from their value as treatment, which cannot yet be assessed, these operations give doctors a chance to learn more about the way the pituitary and other glands act.

Science News Letter, February 16, 1952

ARCHAEOLOGY

Ancients Used Alcan Route

Alaskan Highway route may have been used 9,000 years ago by immigrating Asian ancestors of Indians, evidence dug up along the military road shows.

➤ THE ROUTE of the Alaska Highway may, 9000 years ago, have been one of the roads down which Asian ancestors of American Indians traveled into North America.

Dr. Hugh Raup, botanist, and Frederick Johnson, anthropologist, think they have found evidence that this might have been the case at various places along the modern military road.

The two scientists figured that early North American man would have looked for the easiest route from Alaska south. This is just what engineers, faced with the same problem in the early days of World War II, did. So the team dug for evidence along the Alaskan Highway.

The two scientists discovered a human culture in the Shakawk valley of southwestern Yukon—through which the Alaskan Highway runs—which gives every evidence of having spread in time throughout most of the period since the retreat of glaciers from the valley into the surrounding mountains.

This retreat, it has been determined, took place about the year 7000 B.C.

Most of the sites they found were buried in wind blown silts. From the nature of the silts, their depth and other geological facts, they were able to determine the times during which the tools were dropped or left there by those who made them.

Dr. Raup and Mr. Johnson found evidence of occupation at some 20 locations. Excavations were made at 11 of these. They uncovered hearths, some of which contained charcoal and scraps of burned bone. Tools were found in some instances, but in all cases they were extremely scarce.

The distribution of some of the tools they found is interesting, according to the scientists. There was a similarity, they said, between the tiny prismatic blades and the cores from which they were struck which they discovered in the Shakawk Valley, and those found in Fairbanks, in the middle of Alaska, on the shores of the Bering Sea, and also westward into Siberia at least as far as Lake Baikal. The significance of these distributions, they said, is as yet in doubt.

Mr. Johnson is curator of the Peabody Foundation for Archaeology, Andover, Mass. Dr. Raup is a botanist with the Arnold Arboretum, Harvard University. Their work was supported by the Viking Fund, Harvard, the Peabody Foundation, the American Philosophical Society and the Arctic Institute.

Science News Letter, February 16, 1952

PUBLIC SAFETY

London Tries Lights At Pedestrian Crossings

➤ TO PROTECT Londoners crossing streets at night, scientists are trying out various methods of lighting where pedestrians should cross the road.

One method will be to put steady or flashing amber lights in the distinctive globes that for years have been used to mark pedestrian crossings. At other points the crossings will be lighted by mercury and sodium floodlights from above. In another case amber lights will flash on an island in the middle of the street.

Borrowing from airport runway methods, another crossing will be marked with slight projections that will give a steady or flashing light. In another place, the zebra stripes of the crossing will be arranged to reflect overhead light so as to be seen by an approaching motorist.

Science News Letter, February 16, 1952

MARINE BIOLOGY

Whale Scars Blamed On Lamprey "Kisses"

➤ THE CURIOUS oval-shaped scars often found on whales all over the world can be caused by parasitic lampreys, Dr. Gordon C. Pike of the Pacific Biological Station on Vancouver Island, B. C., reports.

He examined 237 whales snagged off Canada's western coast, finding on them the same whitish or gray-colored scars that have been observed on species of whales from many parts of the world. Barnacles and biting fish have been suggested as the cause. Previously the idea that the scars were caused by "sucking fish" was rejected because no teeth marks were found. Dr. Pike has pinned the blame on the lamprey from the marks on the skin caused by the horny cusps and mouth parts of the sucking fish, calling such evidence "unmistakable."

Science News Letter, February 16, 1952

MEDICINE

Attack Schizophrenia

Find chemical, cholinesterase, that reduces some of the bizarre behavior of those afflicted with the serious mental disease, schizophrenia.

➤ A NEW chemical attack on the serious mental disease, schizophrenia, is now under way.

A chemical has been found which reduces some of the bizarre behavior of this sickness. The chemical has been given to patients by injection into the ventricles, or cavities, of the brain.

News of this new approach to the conquest of schizophrenia, which fills one-fourth the hospital beds in this country, is reaching the scientific world through two English scientific journals. The first report, in NATURE (Jan. 26), is by Dr. Stephen L. Sherwood, neurosurgeon at Middlesex Hospital in London, England, and Miss Ellen Ridley and Dr. Warren S. McCulloch of the department of psychiatry, University of Illinois College of Medicine at Chicago.

Cholinesterase is the chemical used by this group both in treatment of patients and in research on cats. The treatment of patients is still strictly on the research level, Dr. McCulloch stresses. It will be probably three years before the scientists will know its real value.

The treatment produces remissions, during which symptoms are lessened. Then the patient relapses. The injections of the chemical into the brain can be repeated, perhaps indefinitely, with improvement each time. But how long the improvement will last after further injections is not known yet.

Further limiting the treatment to the research level at present is the fact that cholinesterase, a body chemical, is not available commercially. For the Illinois research it was extracted from human red blood cells by Dr. James Bain of the University of Illinois.

The schizophrenia patients likely to be helped by this treatment, if further research proves its value, are those with catatonia. Stubbornness, negativeness, and a stupor or trance-like state are characteristic of this form of schizophrenia. Patients lie motionless, doing nothing for themselves. They will hold for long periods any posture their bodies are put into, such as head turned, one arm extended and body bent at the hips.

Cats get a condition that cannot be told from human catatonia as a result of a special kind of brain injury. When these catatonic cats are given cholinesterase injections into their brain ventricles, the symptoms disappear for an hour and a half to two hours. The improvement is sustained and advanced by repeated injections.

Most interesting to scientists and perhaps most hopeful for eventual conquest of the catatonic form of schizophrenia and maybe other forms is the chemistry underlying the cholinesterase treatment.

This body chemical normally destroys acetylcholine. This is another body chemical which is set free when nerve endings in voluntary muscles are stimulated to contract the muscles. The cholinesterase controls the acetylcholine, preventing too much of it from accumulating at nerve endings. A number of drugs counteract cholinesterase. Among them is di-isofluorophosphonate. In large doses this and similar chemicals produce symptoms resembling some mental diseases and they aggravate the signs and symptoms of schizophrenia.

These findings, made by other scientists, gave Dr. Sherwood the idea that cholinesterase and similar drugs counteracting acetylcholine might reduce the symptoms of schizophrenia. There are other, muscle relaxing drugs which counteract acetylcholine. Among these are some derivatives of the old Indian arrow poison, curare, and such synthetics as Flaxedil, Mytolon and Syncurine. Several investigators are now trying Flaxedil in patients with catatonia, but results are not yet ready for reporting.

These chemicals, although they counteract acetylcholine, do not achieve this in the same way as cholinesterase. The latter destroys acetylcholine. The others prevent a muscle from becoming permanently depolarized, thus relaxing it.

So far, no one knows whether the trouble in catatonia is accumulation of too much acetylcholine or over-sensitivity of some persons to normal amounts of acetylcholine. If the scientists can find out why cholinesterase and perhaps some synthetic drugs help even temporarily in catatonia, they may know what goes wrong in the body to produce the disease. Then there will be much greater hope of remedying or preventing the sickness.

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ENGINEERING

Robot Motorist Helps To Find Better Rides

➤ A ROBOT motorist with mechanical nerves is the newest scientific tool for designing more comfort and safety into automobiles.

ROBOT MOTORIST—To help make automobile riding smoother, this device automatically records on a moving tape the slightest rolling, pitching or zigzag motions in cars under test. Chrysler Corporation engineers combined a small gyroscope, a spark coil and a metal pointer to make the robot motorist.

Chrysler Corporation research engineers have developed this new gyroscopic ride recorder to measure the slightest rolling, pitching or zigzag motions in cars under test.

The recorder is so sensitive and quick thinking that it evaluates certain important ride qualities instantly and without the need for mathematical calculations or allowance for centrifugal force on curves. It has been used to help determine the merits of various combinations of suspension systems and components, such as stabilizer bars, in contributing to passengers' riding comfort.

The ride recorder feels and thinks with the aid of a small gyroscope, a gas-driven turbine, a spark coil and a metal pointer that writes the answers on a roll of waxed paper.

One terminal of an electrical spark gap is formed by the tip of the pointer. A plate behind the moving waxed paper tape supplies the ground. Current from the car's electrical system operates the spark coil and drives the tape.

While the case that houses the waxed paper tape and the frame of the gyroscope moves with the car body, the gyroscope holds the pointer steady, with the tip almost touching the tape. As the paper moves past the pointer, intermittent sparks from the pointer trace on it an accurate pattern of roll, pitch or zigzag motion. This information can be interpreted accurately in half degrees from the tape record.

Science News Letter, February 16, 1952

INVENTION

Hand Mold Insures Hand-Tailored Hamburgers

➤ A HAND mold for hamburgers which insures that they will all be of the same size and fit the bun exactly has been invented by Augustus H. Belt, Bloomington, Ill. He received patent number 2,584,536 for his invention.

Science News Letter, February 16, 1952

NUTRITION

Budget Protein Foods

➤ MOST HOUSEWIVES try to have one meat dish for the family each day, not only because it taste good but because they know it is highly nourishing.

There are, however, many other foods that furnish the same kind of nourishment in the form of high quality protein. And often they are less expensive than meat. Some comparative values of these foods are given by Miss Elizabeth E. Ellis, home economist of the University of New Hampshire.

"If you have a dollar to spend on foods providing protein," she says, "it is interesting to find that at today's prices you could buy the most for one dollar from foods in the following order: Skim milk, cottage cheese, American cheese, pork liver, codfish or haddock, whole milk, tuna fish, pork shoulder, eggs, hamburg, fowl or chicken, beefsteak (round), veal chops, pork chops and lamb chops.

"Vegetable proteins from dried beans and cereals do not have as good body building qualities, but they are valuable, especially when combined with proteins from animal sources. There is very little research to show us just how to mix animal and plant proteins for best results. A good rule is for adults to get one-half their protein from animal sources, and children should get even more than this."

To help in planning for the daily supply of protein, Miss Ellis points out that one egg, one glass of milk, 3 ounces of fish and one ounce of cheese equals 5¼ ounces of round steak in protein content; that ½ ounce of cheese, a glass of milk and 3 ounces of chicken will provide an equal amount of protein; or 3 cups of milk and 3 ounces of pork shoulder. If the older children have 4 cups of milk, 3 ounces of pork shoulder and one egg; or 3 ounces of fish, one egg, one glass of milk and one ounce of cheese, they will get as much protein of good quality as in 8¾ ounces of round steak.

The remainder of the protein for the day could come from such sources as cereals, dried beans, and peanut butter.

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Question Box

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What tricks can be used to reunite separated mercury in a thermometer? p. 104.

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ASTRONOMY

Gather for Sun Eclipse

Total solar eclipse scheduled for Feb. 25 sends many astronomers from all over the world to the Anglo-Egyptian Sudan. Wide variety of observations will be made.

➤ THE TOTAL eclipse of the sun to occur on Feb. 25 is bringing some of the world's top-flight astronomers to the tropical city of Khartoum in the Anglo-Egyptian Sudan.

Already astronomers from the United States, Canada, England, France, the Netherlands, Italy and Egypt are setting up their telescopes and other apparatus for observing the solar eclipse. Equipment has been reaching the Sudan since before Christmas. A few scientists arrived in November to select favorable sites for viewing the eclipse.

Telescopes, radio telescopes and a wide variety of other equipment, including some specially designed for use during this eclipse, will be turned on the sun's outer envelope when the moon comes between the sun and the earth. Totality will last about three minutes.

The composition and temperature of the sun, behavior of sky light during a total eclipse, possibilities of a "daylight aurora," and fluctuations in the earth's magnetic field at low intensities all will be studied. Maps may be made more accurately because of observations made at this eclipse. Einstein's theory of relativity may be rechecked by calculating how much light from distant stars is bent as the light rays pass near the eclipsed sun.

Such a wide variety of observations are being conducted that astronomers at Khartoum are holding a series of evening meetings at which the work of the various expeditions is described and discussed. At the first session, observations through use of radio techniques were described by Dr. J. P. Hagen of the U. S. Naval Research Laboratory and Dr. M. Laffineur, leader of the expedition from Paris' Astrophysical Institute.

Because of the favorable location of Khartoum, famous for its clear skies, practically all groups are working in this area. An exception is the joint expedition from the Royal Observatories at Greenwich, England, and Helwan, Egypt, which is operating at Tendelti and En Nahud. The University of Ottawa expedition has already set up an observation station at Musmar.

The various departments of the Sudan Government, the Army and the Royal Air Force are collaborating in giving the expeditions all possible assistance and facilities. Under a special agreement with the director of customs, all scientific apparatus and personal equipment is being admitted to the Sudan free of duty. Astronomers can ride Sudan railways and steamers for half-fare.

All available photographic dark-rooms in Khartoum are being placed at the disposal of expedition members. Huts will serve as dark-rooms for members of the Greenwich-Helwan expedition.

The path of totality passes diagonally from southwest to northeast across the Sudan. At Khartoum the path is over 80 miles wide. The sun will be obscured at about 11 o'clock, so it will be almost directly overhead. Even though totality will last only about three minutes (a few eclipses have lasted as long as seven minutes), some 50 astronomers have gathered for the event.

The city of Khartoum is really an oasis in the middle of the desert, despite the fact it is located on the banks of the Nile River, at the confluence of the Blue and White Niles. This city was chosen because of its favorable position in the eclipse path and its virtual absence of rainfall.

Over 20 astronomers and technicians from the United States have already reached the Sudan. A group headed by Dr. J. W. Evans of the High Altitude Observatory of Boulder, Colo., will correlate its observations with those of the U. S. Naval Research Laboratory, working under the direction of Dr. Edward O. Hulburt. The Aeronautical Chart and Information Service of the U. S. Air Force, with Col. P. C. Schauer in charge, will work with the Rev. Francis J. Heyden, S. J., director of Georgetown University Observatory. The National Geographic Society and Yerkes Observatory expedition is led by Dr. G. Van Biesbroeck.

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DIZZY GROUSE — Biologists in North Dakota are now hunting ruffed grouse for restocking purposes with a flashlight. Here one of the birds is shown just before being rocked back and forth in the tree until it falls to the ground dizzy.

INVENTION

Floatable Breakwater For Off-Shore Protection

➤ A FLOATABLE breakwater, designed to protect off-shore oil wells and other installations from sea waves has been invented by Paul L. Guarin, Houston, and assigned to the Shell Development Co., San Francisco. It received patent number 2,584,867. His breakwater is made up of a number of readily portable units chained together which can be anchored to the bottom and which will extend from the bottom to the sea surface.

Science News Letter, February 16, 1952

BIOLOGY

Biologists Make Grouse Dizzy to Catch Them

➤ IT SOUNDS dizzy, but biologists in North Dakota go out armed only with a flashlight and a knowledge of how to make a bird dizzy to catch ruffed grouse for replanting purposes.

It's as simple as this: During the winter months the biologists tramp at night in likely territory until they flush a bird; it flies to a tree. Focusing a strong, blinding beam of light on the grouse, the field biologist rocks the tree back and forth until the bird becomes dizzy and falls to the ground. Then a fish landing net is quickly thrown over the stunned bird and another grouse is available for re-stocking.

After experimenting in several methods of securing live grouse, Field Biologist Wilford L. Miller of the North Dakota Game and Fish Department devised this unique and almost incredible technique.

"Some wildlife men pooh-pooh our method of capturing live grouse," Mr. Miller states, "but it has proved successful for us and was used during January and February, 1951. We are continuing it this winter."

The dizzy grouse project was conducted in the Turtle Mountain region of north-central North Dakota, near Bottineau. The valuable upland game birds were then transplanted to the Killdeer Mountain area in the western part of the state.

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MEDICINE

Three Views of Alcohol

Alcohol pictured in three different lights, arch-villain, hero and innocent victim of malicious slander, by discoverer of Antabuse, anti-alcohol chemical.

➤ PEOPLE WHO like their liquor should take vitamin pills to avoid the fate of "drinker's liver," Dr. E. Jacobsen, Danish scientist discoverer of the alcoholism-curing drug, "Antabuse," declared at a meeting at London University, London, England.

Dr. Jacobsen pictured alcohol in three different lights: archvillain, hero, and innocent victim of malicious slander.

Leaving aside the social aspects of alcoholism, alcohol takes on the role of villain because of the ready way in which it supplies the body with a large number of extra calories. The human body is able to burn up enough alcohol each day to manufacture 1,200 calories, which is almost half the total required by the average office worker. Because of this a good deal of food a drinking person eats is not burned up but stored away as rolls of fat.

Some heavy drinkers react to the calories supplied by the alcohol by cutting down on the amount of food they eat. This usually leads to a vitamin deficiency, particularly of the B vitamins. That is where the slander and vitamin pills come in.

The slander involved is the commonly repeated story of cirrhosis and fatty degeneration of the liver supposed to be caused by the "poisonous" effects of alcohol. Dr. Jacobsen does not believe there is a shred of truth to this talk about alcohol being a liver poison. One of the functions of the liver, he says, is to burn up alcohol. This it does passively through enzyme action, so that drinking alcohol does not directly harm a good liver; nor does abstinence, so commonly prescribed in liver disorders, particularly help a bad one.

The cirrhosis and degeneration of the liver often found in chronic alcoholics is only indirectly due to the liquor these people consume. The conditions are brought about by the dependence of the drinkers on vitamin-lacking alcohol as a calorie substitute for vitamin-containing foods.

But even alcohol can be a hero and this it is in cases of poisoning by wood alcohol—"smoke," in the addict's jargon—which can kill a person or leave him permanently blind. Wood alcohol in itself is not poisonous, but in the body an enzyme turns it into formic acid, which is extremely so.

Formic acid is not burned in the body. It must be excreted and as its excretion is slower than its formation from the wood alcohol, a poisonous amount soon accumulates in the body.

The only possible way to stop the poisoning is to cut down the rate of transformation of "smoke" into formic acid. Grain alcohol (ethyl alcohol to chemists, just plain "alcohol" to the layman) is the only substance so far known which can turn this trick. When burned in the body alcohol can make use of the same enzyme needed by the wood alcohol. By giving the sufferer large doses of alcohol doctors can tie up most of the enzyme with the latter, leaving only a little enzyme free for the wood alcohol. In this way the rate of formic acid formation is cut down to a snail's pace and the body can eliminate it as fast as it is formed.

Once in the blood stream, alcohol is eliminated by most people at a steady, unalterable pace of about one-quarter ounce per hour. Exercise doesn't make the slightest particle of difference, so that the time-honored treatment of walking an inebriated person round and round is just a waste of good time and energy. Even injections of insulin do not alter the rate of alcohol elimination.

Dr. Jacobsen did, however, give scientific support to the notion that mixed drinks are less intoxicating than straight liquor. Experiments have shown that, other things being equal, the lower the concentration of alcohol in a drink the more slowly is it absorbed into the blood. This naturally slows the accumulation of alcohol in the blood and retards onset of inebriation effects.

PAINTED LADY — Also known as the Cosmopolitan or the Thistle Butterfly, the Painted Lady is a world-wide roamer. It feeds on thistle and related plants.

Explaining how his drug, "Antabuse," discouraged people from drinking, Dr. Jacobsen showed how alcohol was burned by the body first to form acetaldehyde and then to form acetic acid, the vinegar acid, the latter being readily consumed by the body in its normal metabolism. When a person takes "Antabuse" the drug partially blocks the conversion of acetaldehyde to acetic acid. The acetaldehyde then accumulates in the blood and makes the person nauseated. Consequently, the alcoholic with sufficient determination to take his "Antabuse" tablet regularly has strong encouragement to keep away from that "one drink" which otherwise becomes his downfall.

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INVENTION

Patent Jet Plane With Droppable End Wing Tanks

➤ A JET plane with fuel tanks at the wing tips, designed as extensions of the wings, and with the motors in the ends of the wings, has been designed by Derwood A. Beck, Seville, Ohio, and Edwyn A. Eddy, Massillon, Ohio, and assigned to the Goodyear Aircraft Corp., Akron, Ohio. It received patent number 2,584,961.

Heretofore, declare the inventors, power plants mounted on the wings were always placed between the wing tips and the fuselage. If the wing motors are placed at the ends of the wings, they say, the wing width can be cut down and an end plate effect results which reduces the wing tip vortex.

Fuel tanks, made to be attached to the ends of the wings and designed as extensions of the wings, carry their own weight at least, result in fuel economy and facilitate take-offs. When the fuel in tanks is expended, they may be dropped by the pilot.

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TAXONOMY

Variegated Fritillary Tagged Erroneously as Painted Lady

➤ ON THE cover of SCIENCE NEWS LETTER for Feb. 2, the butterfly Variegated Fritillary, *Euptoieta claudia* Cramer, was erroneously identified as the Painted Lady, *Vanessa cardui* Linnaeus. Although these butterflies are both of the same family, nymphalidae, they are different species.

The first of the many alert readers of this magazine to call attention to this mistaken identification was Frank C. Cross of Silver Spring, Md. The identity of the Variegated Fritillary was further checked by William D. Field, lepidopterist of the Smithsonian Institution.

So that you can see for yourself exactly what the Painted Lady does look like, a Smithsonian Institution photograph of that species appears on the left.

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MEDICINE

Senator Pushes "Cure"

Sen. Tobey has demanded approval by medical profession of "cure" for cancer now being investigated by Massachusetts Medical Society.

➤ SEN. CHARLES W. Tobey (R., N.H.) has demanded of the medical profession that it approve a "cure" for cancer and other diseases.

Recently he requested representatives of the Medical Division of the National Research Council to appear before him. He wanted to know, according to Dr. Milton C. Winternitz, director of the NRC Medical Division who went to Capitol Hill, why his organization could not investigate this "cure" in a few days and come up with an answer. He has made similar requests to many medical schools.

The "hearing" which Sen. Tobey held, without sanction by the Senate, was conducted largely by the Senator's son, Charles W. Tobey, Jr., who has been treated for a form of cancer by Dr. Robert E. Lincoln, Medford, Mass.

Mr. Tobey, Jr., is one of the three persons who signed a declaration of trust for the "Lincoln Foundation Trust" to receive the inventions, for which patents have been applied, for the "cure" of cancer, tuberculosis and other diseases.

Sen. Tobey has been extensively using the appendix of the Congressional Record to inform the public about this "cure". Five pages, in two days, have been devoted to letters, addresses and general extensions of remarks about the "cure" promoted by Dr. Lincoln.

The Massachusetts Medical Society has been conducting an extensive investigation of this "cure," although it is hampered by a lack of the kind of information needed for investigations of this kind. However, the society expects to get out a report shortly.

Procedures have been carefully worked out for the investigation of the purported cure of any disease, Dr. Winternitz explained to SCIENCE SERVICE. He emphasized that these procedures are followed no matter who sponsors the cure, established scientists, doctors or others.

First, he explained, the material used for the alleged cure must be available to the investigators. Then, it must be established that it is not poisonous. After that, the investigators conduct a series of experiments to find out what the material will do to animals with the same diseases.

Only then is the material tried on human beings. These experiments must be conducted by objective personnel with no vested interest for or against the proposed therapy. There must be an adequate number of cases tested, an adequate number of "controls" or patients with the same disease not given the treatment, and an adequate amount of time given to the tests. In addition rigid laboratory procedures must be followed which will serve as a check on the objectivity of the investigators.

The substance used by Dr. Lincoln to "cure" a long list of diseases is a bacteriophage—a substance which kills bacteria. It was made from the pus found in a frontal sinus.

The effect of bacteriophage on bacteria was discovered in 1912 by d'Herelle. It has not, however, to date been applied to so many seemingly unrelated diseases.

Dr. Winternitz expressed sympathy for Sen. Tobey. He would express no opinion as to the merits of Dr. Lincoln's treatment, preferring to wait until the report from the Massachusetts Medical Society is available. He pointed out, however, that the National Research Council is not a government organization and, therefore, not answerable to Congress. The NRC, he said, can undertake investigations only for its sponsoring bodies—those who pay the bills.

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RADIO-CONTROLLED LIFEBOAT—The fin-like contraption on the stern of this radio-controlled lifeboat helps keep it upright when it is dropped by parachute. The fins are discarded by remote control after the boat lands in water and the craft is then steered to the side of stranded survivors.

INVENTION

More Passenger Rooms In Railroad Sleeping Cars

➤ FROM 36 to 42 persons can be accommodated and can sleep in their own private rooms on passenger trains, according to patent number 2,583,960 issued to Goodrich K. Murphy, New Canaan, Conn., and assigned to the Budd Company, Philadelphia, makers of railroad cars.

Science News Letter, February 16, 1952

TECHNOLOGY

Radio from Airplane Guides Parachuted Boat to Rescue

➤ A RESCUE airplane can parachute a lifeboat near wreck survivors struggling in the water below and then guide it by radio control unerringly to them.

An electrical control system for this purpose has just been developed by Westinghouse Electric Corporation's transformer division, tested on Lake Pymatuning near Sharon, Pa., and accepted by the U. S. Air Force.

The new system uses the radio signal from the air to control the engine and equipment for driving and steering the boat. When boarded by those rescued, control and steering can be taken over by those aboard.

The rescue boat that is air-dropped and then radio controlled is 30 feet long, weighs 3,500 pounds, holds 15 people and has provisions for 10 days and fuel for 800 miles.

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FORESTRY

Millions of New Trees Planted for Future Wood

➤ MILLIONS OF new trees are being planted by farmers in this country to meet the future wood needs of the nation.

As a defense project of the U. S. Department of Agriculture's Extension Service, Georgia alone is planting 100,000,000 trees a year for the next five years.

Aim of the national project, in which 43 states and one territory cooperated during the past year, is to help meet the demand for building materials and other wood products needed for defense.

The official report of the project, by Dr. M. L. Wilson, director of the Extension Service, states that farmers own nearly half of the nation's 184 million acres of privately owned forest lands. Of these acres, 139 million are suitable for growing continuous crops of timber.

Water as well as wood will be conserved by the proper handling of these forests, because many of the farm woodlands are on important watersheds.

The Georgia tree planting is being carried on with the cooperation of a banking organization. As a result, 100 local banks made possible the purchase of 150 tree-planting machines which are available to farmers free of charge.

Science News Letter, February 16, 1952

MEDICINE

Three Tropical Diseases Attacked by Penicillin

➤ THREE DISEASE scourges of tropical countries which disfigure, cripple and even mutilate millions of victims can be practically wiped out by penicillin.

The diseases are bejel, which afflicts children and women chiefly among Arabs and Bedouins in the East, yaws, and pinta, the spotted disease of the Western Hemisphere.

Penicillin conquest of these plagues was declared possible in reports to the New York Academy of Sciences.

"Bejel can be controlled and virtually eliminated within a few years by a program of small medical teams, using only penicillin and circulating along definite routes, traversed again at intervals," Dr. E. Herndon Hudson of Ohio University, Athens, Ohio, stated. His report was based on good results of such work carried on in Iraq under the auspices of the World Health Organization, UNICEF and the Iraq Government.

Yaws can now be "cured" in a short period of time and at a low cost, Dr. Charles R. Rein of New York University-Post Graduate Medical School declared.

"There is no reason why millions of people throughout the world," he stated, "should be affected with this crippling and disfiguring non-venereal treponemal disease."

Good results of treatment with a penicillin preparation of Mexican Indian peasants with pinta were reported by Dr. D. K. Kitchen of Bristol Laboratories, Inc., New York. Pinta spots the skin white, brown, blue, yellow or violet. The disease probably existed among the Aztecs at the time of the Spanish Conquest. But, declared Dr. Kitchen, with penicillin, "eradication of this disfiguring and stigmatizing disease now looms as a distinct possibility."

Science News Letter, February 16, 1952

ASTRONOMY

First Comet of Year Discovered in Sky Survey

➤ THERE IS a new comet in the sky—the first to be discovered this year.

Named the Harrington-Wilson comet, the recently-found visitor from space is of fifteenth magnitude, too faint to be seen without a powerful telescope. The object was located on Jan. 30 in the constellation of Virgo, the virgin, and was moving toward the constellation Coma Berenices, Berenice's hair, both of which are now low in the northeastern sky.

Dr. Albert G. Wilson and Robert G. Harrington, of both the California Institute of Technology and Mt. Wilson and Palomar Observatories, spotted the diffuse object on a plate taken as part of the sky survey being conducted by Palomar Observatory and the National Geographic Society. That region of the sky where the comet is now located contains quite a few nebulae. The comet is fairly close to the ecliptic, the apparent path of the sun through the sky.

The same astronomical team discovered another faint comet last August in the constellation of Ophiuchus, the serpent holder.

Science News Letter, February 16, 1952

INVENTION

24-Hour Alarm Clock Eliminates Tardiness Excuse

➤ YOU WILL no longer have the excuse that you forgot to set the alarm if a 24-hour alarm clock just patented comes into general use. It was invented by Herman D. Parks, Schenectady, N. Y., and given patent number 2,583,794. Rights were assigned to the General Electric Company.

According to the patent, if you set your alarm for seven a. m., and then turn it off, it will automatically ring again 24 hours later. But, it will not ring at seven p. m. This is accomplished with a 12-hour alarm cam giving the clock the simplicity of a 12-hour alarm. At seven p. m., the alarm mechanism, instead of setting off the bell, merely turns the alarm on so it will be ready to ring the next morning.

Science News Letter, February 16, 1952

IN SCIEN

PHYSICS

Tricks for Reuniting Thermometer's Mercury

➤ IF THE mercury in your thermometer or thermostat casing separates, try one of the following tricks before sending it back to the factory. They are usually effective in reuniting the mercury, says Robert Soroka, engineer for the Minneapolis-Honeywell Regulator Company, Minneapolis, Minn.

First, tap the case or thermometer in the palm of your hand, bulb down. If this doesn't work, try centrifugal force by attaching a stout string to the thermometer and swinging it in a circle around your head. Finally, there is the refrigeration technique. All this involves is placing the thermometer or thermostat casing in the freezing compartment of a refrigerator where the cold will draw the liquid down into the bulb.

Science News Letter, February 16, 1952

TECHNOLOGY

Exploding Atoms Aid Making New Lubricants

➤ EXPLODING ATOMS manufactured in the AEC's Oak Ridge atomic reactor are being used by the Shell Development Co. laboratories in Emeryville, Calif., to measure the effectiveness of new lubricants for tomorrow's machinery and automobiles.

Machinery gears are given wear tests with different kinds of oils. One of the gears is radioactive. The amount of wear is accurately measured by picking up the radioactivity of microscopic particles in the oil stream with a Geiger counter.

The "hot" gear is made radioactive by being bombarded with neutrons in the Oak Ridge, Tenn., pile and rushed back to the California laboratory for testing.

The "cold" gear is tested by placing it on ordinary photographic film. If an exposure shows on the film, the Shell Oil scientists know that metal from the other gear has been transferred and the lubricating oil has failed to do its job effectively.

Before the new radioactive method was used wear testing was slow and tedious since every gear had to be weighed carefully and examined microscopically, before and after testing a lubricant with it. The radioactive method is more accurate as well as faster.

M. E. Spaght, president of Shell Development Co., predicted that new lubricants for high pressure and high speed machinery will be developed through use of the new gear testing method.

Science News Letter, February 16, 1952

ENE FIELDS

MEDICINE

"Bang" Chemical Helps Heart Disease Patients

➤ PETN, the chemical that puts the "bang" in the bazooka's tank-killing rocket projectiles, is helping patients with heart disease, angina pectoris.

Patients have fewer attacks and considerably less pain when attacks occur as a result of treatment with this chemical, doctors in New York and California report.

Chemically, PETN is known as pentaerythritol. As a drug, it is called Peritrate. It does not replace nitroglycerin for relief in angina attacks, but patients taking this new explosive drug need less nitroglycerin.

Physicians reporting clinical trials with it in the medical publication, JOURNAL OF ANGIOLOGY, are: Drs. Travis Winsor and Patrick Humphreys of the University of Southern California, Dr. Abraham Perlman of New York Medical College and Drs. Saul S. Samuels and Elias D. Padernacht of the Stuyvesant Polytechnic Hospital, New York.

The drug is manufactured by the Chilcott Laboratories, Morris Plains, N. J.

Science News Letter, February 16, 1952

METALLURGY

Copper-Clad Steel Helps Copper Shortage

➤ PRESENT AND future shortages of copper may be relieved with a new copper-clad steel which can be made, unlike earlier types, in large sheets and plates.

The process was developed by W. L. Ulmer of the Superior Flux and Manufacturing Company, Cleveland. It is made possible by the use of a highly volatile liquid flux, which vaporizes when used, to counteract the oxides that form when steel is heated.

The process of making this bi-metal, in which the copper is inseparably bonded to the steel, starts with thick slabs of steel on which molten copper or copper alloy is cast. The bi-metal slab is then rolled into commercial sheets, plates and strips. The product combines the corrosion resistance of copper with the strength of steel and can be drawn or rolled without danger of separation of the two metals. Sheets 80% steel and 20% copper can be produced. Any percentage of copper or brass to steel can be produced from 10% up.

Copper-clad steel has been made by several processes during the past years but these processes have not provided copper-clad steel in large sheets and plates where the demand mainly exists, Mr. Ulmer states. A copper-clad wire, however, has been successfully made for several years.

Most metallurgists believe that in order to form an inseparable bond between two dissimilar metals, there must be a casting or pouring of molten copper on to heated steel, he said. This results in an actual fusion and alloying of the two metals.

In carrying out this process of fusion, a flux must be used to counteract the oxides which form when steel is heated. Flux in solid form is not satisfactory. In the new process, Mr. Ulmer uses a highly volatile liquid flux which he invented. Its trade name is "Gasflux." This liquid flux vaporizes when used.

Science News Letter, February 16, 1952

DENDROLOGY

Mangrove Trees Plunge Seedlings Straight into Mud

➤ MANGROVE TREES actually do plant most of their seedlings vertically in the mud, thus giving the young trees a good chance at healthy growth.

Studies by Dr. Carl D. La Rue and Thomas J. Muzik of the University of Michigan at Ann Arbor and the Federal Experiment Station at Mayaguez in Puerto Rico have confirmed the disputed theory of how young mangrove trees get started on their own.

They surveyed three areas of a typical mangrove swamp to find out whether the old story was true. About 95% of the young seedlings, after growing to about 14 inches on the mother tree's fruit, are dropped vertically into the ground. The scientists' survey showed, however, that some seedlings fall flat in the mud, These, when floated away, are the most important means of spreading mangrove trees to distant sites.

Mangroves develop many prop roots in the air, and these, after a time, form a mass that cannot be penetrated. The trees are thus active land builders.

Science News Letter, February 16, 1952

MEDICINE

1000 Patients Helping Cancer Education

➤ ONE THOUSAND patients in cancer clinics and detection centers throughout New York State are helping scientists of Cornell University, Ithaca, N. Y., learn why some patients go promptly to cancer detection centers and why others delay going.

They are also telling the scientists how they feel about doctors, clinics and disease, what they know about cancer and where they got the information.

The findings of the study, being made by Profs. Edward A. Suchman and Robin M. Williams, Jr. and Mrs. Rose K. Goldsen will be made available to the New York State Department of Health for use in cancer control through education.

Science News Letter, February 16, 1952

BIOCHEMISTRY

New Synthesis Gives More Compound F for Arthritis

➤ MORE THAN twice as much Compound F may soon be available for trial as an arthritis remedy, thanks to a new synthetic method announced by Miss Rose Antonucci and associates of Lederle Laboratories at an American Chemical Society meeting in New York.

Compound F, also called Hydrocortisone, is an adrenal gland hormone related to cortisone. It is believed to the principal hormone ot the adrenal gland cortex and some scientists think it may be even more effective than cortisone in arthritis. Scarcity of the chemical has so far limited trials of it.

Several methods of synthesizing Compound F have been developed. Among these is one worked out by scientists at Merck and Co. in which cortisone is converted to Compound F. The process involves protecting two of the carbonyl groups. Merck scientists did this with semicarbazide and reported a yield of about 8%. The Lederle method uses ethylene glycol and yields about 20% of Compound F. The Lederle method is also said to be "much cleaner and easier."

Besides Miss Antonucci, the Lederle team consists of Robert Lenhard, Ruddy Littell, Dr. Seymour Bernstein, Dr. Milton Heller and Dr. J. H. Williams, Lederle's director of research.

Science News Letter, February 16, 1952

INVENTION

Color TV Improvement Aims Electrons Correctly

➤ AN IMPROVEMENT to an RCA color television tube which more correctly aims the electrons at the TV screen, received patent number 2,584,814. It was invented by Milton Rosenberg, Trenton, N. J., and Jan A. Rajchman, Princeton, N. J., and assigned to the Radio Corporation of America.

On a color TV screen, the inventors explain, the dots, which translate the electrons into light, are subdivided into parts which are sensitive to the colors, red, green or blue. It is important that electrons intended to light up the red part of a dot, exactly hit that part. This is called "registry."

To obtain registry, a screen is placed between the electron source and the picture screen. This screen has many fine apertures in it which are lined up with the dots.

This particular invention adds to that arrangement a group of closely-spaced, parallel, multi-apertured electrodes, mounted between the electron gun and the screen. This, the inventors say, assures that each different color signal controls all light emissions of one color and none of any other color.

Science News Letter, February 16, 1952

HORTICULTURE

Better Nuts Coming

Scientists on lookout for better nuts and better trees on which to grow them. They want black walnuts that crack out easily and smaller almonds, with more nuts per tree.

By MARTHA G. MORROW

➤ BOTANISTS TRYING to remodel the nuts we eat are on the lookout for:

Black walnuts that crack out as easily as Persian (English) walnuts.

Pistachio nuts with split shells so they can be processed by machinery.

Super Persian walnuts that can be harvested in time for Thanksgiving.

Smaller almonds, but more per tree.

In their search for better nut trees, scientists are hoping to produce:

Sweet chestnuts that will flourish throughout most of the United States.

Black walnuts with resistance to bunch disease which produces tremendous mistletoe-like clusters of branches.

Pecan-bearing trees with the disease-resistance and hardiness of hickories.

Plant specialists of the U. S. Department of Agriculture's Plant Industry Station at Beltsville, Md., are already hard at work trying to cross the pecan with its close relative, the shagbark hickory. Through careful search they also have found a dozen natural hybrids scattered throughout the country. In early spring a million blossoms crown these "hican" trees, but only about a dozen nuts mature on any one tree.

A second generation hybrid, with one of these slim producers as one parent and a pecan as the other, may have the desired characteristics. The search for a more promising hican continues.

A freak or sport in the black walnut family, or a second-generation cross between this and a Persian walnut may produce a nut that tastes like a black walnut but cracks easily like a Persian walnut. In addition, scientists are hopeful of growing such nuts on a tree which has the hardiness of a black walnut, yet like a Persian walnut every year bears nuts all over the tree. Experts are looking for such trees in nature and also attempting to produce them by controlled cross-breeding.

Smaller, sweeter almonds are now desired because the American public likes whole kernels in its candy bars. Several promising varieties recently developed cooperatively by the U. S. Department of Agriculture and the University of California are excellent for use in many candy confections, but too large and plump for many to be used in a single chocolate bar.

A number of almond trees have recently been imported from Spain and Italy to be crossed with almond trees that flourish in the United States. Some day trees that in this country will produce large crops of small nuts may result.

A Persian walnut as good as the Franquette variety, but one that matures ten days to two weeks earlier, is being sought. Such a stepping-up of nature's production schedule would put large unbroken walnut halves fresh from the orchard on the dinner table by Thanksgiving. Here plant specialists are testing the performance of little-known varieties rather than trying to develop new ones. Already one or two promising types have been found.

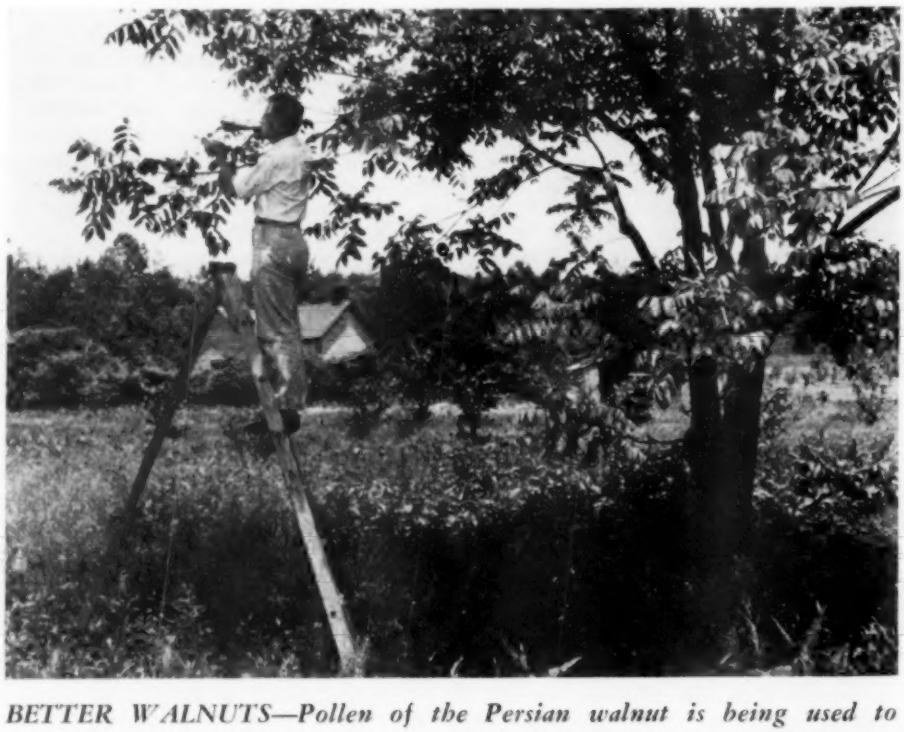
The search for better nuts and better trees upon which to grow them is being spearheaded by Dr. H. L. Crane of the division of fruit and nut crops and diseases of the U. S. Department of Agriculture. He is assisted by Dr. J. W. McKay and others in the division, who, wherever possible, are cooperating with state experiment stations and industrial nut agencies.

Blight has destroyed practically all of the lovely old American chestnut trees that several decades ago furnished a goodly supply of these sweet nuts. But chestnuts are returning to the American scene in blight-resistant Chinese varieties. Three promising new chestnuts have recently been made available by the U. S. Department of Agriculture for orchards in the Southeast and can be obtained from nurserymen. Plant scientists are still trying to develop a hardy variety that will produce well in northern climates.

Promising Filbert Varieties

Two new filbert varieties look promising for the Northeast. Obtained by crossing the wild hazelnut and the commercial European filbert such as is grown in Washington and Oregon, these first generation hybrids are much better than the plant specialists who produced them dared hope.

Some day the pistachio nuts you obtain from the corner vending machine may be grown in the United States. Native to Iran, Turkey, Syria, and bordering Mediterranean countries, a few pistachio nuts are now being grown experimentally in localized areas of California. The Department of Agriculture is attempting to develop varieties that will be commercially profitable in this country, reports Dr. W. E. White-



BETTER WALNUTS—Pollen of the Persian walnut is being used to pollinate the female flowers of this black walnut to improve the species. Dr. J. W. McKay, horticulturist of the U. S. Department of Agriculture's Plant Research Center at Beltsville, Md., uses a syringe gun for the job.

house. Not only must the trees do well here, but they should produce nuts with split shells so they can be opened easily, either by hand or by machinery.

The macadamia nut, which looks like a marble and tastes somewhat like a cashew, has recently been introduced into the United States. Among its most enthusiastic supporters are men and women who were stationed in Australia and Hawaii during World War II. Native to Australia, particularly the Queensland area, it grows well in Hawaii. A few trees have already been planted in southern California. The California Experiment Station recommends them for avocado orchards to replace avocado trees that have died.

As pistachio planting in the United States is still in the experimental stage, practically all of the 6,000,000 pounds of pistachio nuts consumed today are imported. All our Brazil, cashew and macadamia nuts are imported from tropical countries. Most of the pecans, almonds, filberts and walnuts consumed in this country, however, are grown in North America.

200,000 Tons in 1951

An estimated 200,000 tons of nuts in the shell were produced in the United States last year. Persian walnuts have topped the list for the past three or four years with an average yearly production of almost 75,000 tons of nuts. Pecans have run a close second with a production of over 72,000 tons. The almond production has been around 39,500 tons per year, and the filbert crop, smallest of all, runs about 8,400 tons. In addition, hickory nuts, black walnuts, butternuts, and pinon nuts from a pine tree are enjoyed locally.

In few sections of the country today do people go into the woods and gather nuts for eating and cooking as did their parents and grandparents. Most of the nuts we enjoy are grown in commercial orchards, found in localized areas, and a much wider variety of nuts is now available.

The pecan is the most important nut-tree crop native to North America. A member of the hickory family, it grows over a wider area in the United States than any other orchard nut. Native to the lower Mississippi Valley and its tributaries, at present 11 of the southern and south central states are producing pecans commercially.

The improved varieties of Persian walnuts on the market today have resulted from hundreds of years of search for a nut that will crack easily to give unbroken halves of kernels. Some of the wild types are just as hard to crack as hardshelled black walnuts and hickories.

The name "English walnut," frequently used for these nuts, is quite inappropriate because this nut is native to Persia, not England. Traders carried them all through the Mediterranean region of Europe and far into China. They probably reached England hundreds of years ago. The present commercial industry in California and Oregon dates back to some walnuts, imported from Chile, planted in 1867 by Joseph Sexton near Santa Barbara. From this bag of nuts came the Santa Barbara soft-shells.

Pecan and Persian walnut trees are large and tremendous bearers when well-cultivated. Filbert trees, on the other hand, are the smallest of the commercial nut-producing trees.

Almonds Grow in California

Filberts grow wild all through the eastern United States and far up into Canada. These filberts, or hazelnuts as they are commonly called, are much too small to be of commercial interest. Yet some varieties, when crossed with species from Europe, have proved promising sources of nuts. Filberts are grown commercially in certain western parts of Oregon and Washington; in the eastern United States some of the new hybrids are grown for home use.

There are few places in the world where almonds can be produced successfully. During the winter the temperature must remain uniformly low to hold the trees dormant until after danger of late spring frost. Otherwise the trees flower early and the blossoms are killed. To mature, they require a hot, dry atmosphere, but adequate soil moisture. Originating in the Mediterranean region, almonds today are grown commercially in the United States only in certain valleys of California.

Close relative to the peach and apricot, an almond is really not a nut at all. The fleshy part of a peach which we eat dries up in an almond and splits away, freeing the central pit or stone containing the nut-seed.

High Protein Value

Brazil nuts, pistachio nuts and peanuts likewise are not really nuts. Technically, a nut is a one-celled and one-seeded, hard-shelled bony fruit having a more or less distinct separate rind or shell. But practically any seed or fruit, be it edible or inedible, is popularly considered a nut so long as it has an oily or starchy central kernel enclosed in a hard shell. A dozen or so Brazil nuts grow together in a pod. Usually two peanuts or more are found together in a shell, which grows underground rather than on a tree.

Pecans have the highest oil content of all nuts; chestnuts, which are mostly starch, have the lowest. The oil content in a few pecan varieties runs as high as 76%, that in walnuts and filberts is about 65%, and that of pistachio nuts and almonds around 53%. The kernel of most of these nuts leaves a grease mark when rubbed across a bit of white paper and burns like a candle when lighted.

Nut kernels are also high in protein. Most of them supply about as much pro-

tein per pound as a porterhouse steak. They are excellent sources of energy.

Six varieties of nuts grown in the United States have been collected for you by Science Service and are available for the nominal price of 75 cents. Hickory nuts, pistachio nuts, pecans, filberts and two other varieties are included in the kit along with suggested experiments and several good nut recipes. Write Science Service, 1719 N St., N. W., Washington 6, D. C., and ask for the Nut Tree Kit.

Science News Letter, February 16, 1952

INVENTION

Now You Can Give Hot Seat—Literally

➤ GOT ANY candidates for the hot seat? Your mother-in-law? Politicians of the "other" party? Now you can literally offer them one. The hot seat has been invented and Glenn F. Butler, Detroit, has received patent number 2,583,816 for it.

A fuel tank, with a burner provided with wicks, gives off the heat in the "seat chamber." This heats the seat and the back of the chair, and the occupant. Canned heat, if desired, can be used.

If no one is sitting in the chair, the asbestos covers can be thrown back and the chair used as a stove, the inventor says. He believes it would be fine in duck blinds.

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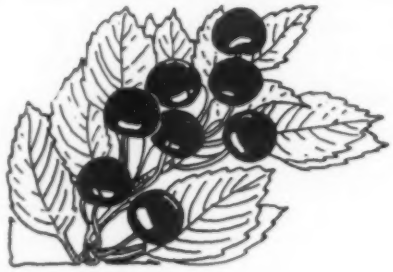
AGRICULTURE

NATURE RAMBLINGS



"Farmer George"

➤ GEORGE WASHINGTON is honored as soldier, statesman, engineer, city planner. Washington thought of himself primarily as a farmer.

When he was at Mount Vernon he was happy; during all the many years he had to be away from that beautiful riverside estate, his chief longing was to get back home and busy himself with management of the land and improvement of its production.

"Farmer George" was a nickname his enemies tossed at him, but for Washington there was no sting in the epithet; farmer he was, and proud of it. His very name, George, is the Greek word that means a farmer.

Yet most of us, if we were to be asked what Washington did on his farm, or for American farming in general, would be stumped. We know one unauthentic legend about a destructive adventure in an orchard at an early period of his life. But few of us ever get to hear of the many trees he had a hand in setting out, or of the fields whose fertility he strove to improve by crop rotation and better cultivation methods.

To anyone who goes there with land use uppermost in his mind, a visit to Mount Vernon is a revelation. It is a gentleman's house, but Washington was by no means what we think of when we use the somewhat derogatory phrase "gentleman farmer." Farming is a business, a business that Washington knew.

He made money at it, as his carefully-kept account books still show. He aimed to improve himself in it: the bookcases still contain agricultural reference books and bound volumes of such farm journals as were available in his day. He was constantly improving the home ground; it is not unlikely that some of the old box bushes and at least two Lebanon cedars at Mount Vernon were planted by his farmhands under his personal direction.

There is one anecdote that shows well how Washington was able to do a real public service and at the same time make the project pay for itself. Finding that the town of Alexandria — metropolis of the Potomac shore in his day—was ill supplied with fresh vegetables, he devoted a few acres at Mount Vernon to raising garden vegetables and once a week sent to town a cart loaded with the produce. Farmer George was a practical soul.

Science News Letter, February 16, 1952

PSYCHOLOGY

Action Is Antidote to Fear

➤ IF EVERYONE in the family is tense and irritable and short-tempered these days, it may be because everyone, even the children, are living in fear. The international situation, the draft, taxes and high prices give plenty of cause for fear. Even very small children, too young to know or understand these causes of fear, can catch the feeling of it and be upset.

Facts and planned action to meet them are good antidotes to fear. First fact to know is that fear is natural and normal. It becomes dangerous when it gets out of control. It is normal to be afraid of fire. But if you get up half a dozen times at night to see whether all the cigarette stubs are dead and the furnace properly banked, your normal fear has gotten out of control. One careful bedtime check of your home should be enough.

Next step in handling fear is to bring it out in the open. Recognize your fears and talk freely about them with your family, friends and neighbors. Then the fear will not be so terrible. This will help the family, too. It is better for children to know mother is worried about high prices than to live in fear because she is always cross.

If you are afraid because you have heard that atom bombs could be dropped on our large cities any time or germs in our water supplies, go to your local civil defense authorities and get the facts. You will find that while such things are possible, they are not very likely to happen. And you will learn what is being done and what you can do to defend yourself and your family.

Then go into action. Do the things you can do, learn to do some of the unfamiliar first aid or other civil defense activities. If your fears are over money matters, set up a family budget and start living accordingly. You will be happier and healthier when you get the habit of applying facts and action to problems instead of letting them frighten and worry you.

Science News Letter, February 16, 1952

METEOROLOGY

Life Span of Silver Iodide

➤ NEW EXPERIMENTS have added to the controversy over whether rain can be artifically induced over wide areas by seeding with particles of silver iodide. Silver iodide is now generally used in the $3,000,000-a-year rainmaking industry.

The experiments, conducted by one of the original rainmakers, Dr. Bernard Vonnegut, and Raymond Neubauer, both of the General Electric Research Laboratories, Schenectady, N. Y., almost directly contradict earlier tests which claimed to show that after 20 minutes exposure to sunlight, silver iodide particles lost their effectiveness as rain "triggers."

Dr. Vonnegut and Mr. Neubauer said, in a report to the American Meteorological Society, that recent experiments showed that from 40% to 100% of the silver iodide remained active after one hour of exposure to ultraviolet light.

Their recent results also do not jibe with the results from another set of experiments in which Dr. Vonnegut took part in New Mexico. At that time, Dr. Vonnegut and his associates in the experiment found that the number of nuclei in a given sample of silver iodide smoke was reduced by a factor of from ten to 100 after an hour's exposure to sunlight or comparable radiation.

The experiments which showed that 20 minutes was long enough to kill the effectiveness of silver iodide were conducted by Edward C. Y. Inn, of the Air Force Laboratories at Cambridge, Mass. He observed that light changed the shape of silver iodide particles. They were first used in attempts to make rain because they are shaped like ice crystals. If their shape is changed, they cannot form ice.

Because of their original shape silver iodide crystals are being used in the rainmaking operations over most of the western states. Dr. Vonnegut and Mr. Neubauer carried out a series of 12 experiments in which silver iodide smoke was subjected to an ultraviolet light. Samples of this smoke were then introduced into a supercooled cloud.

The two scientist do not know, they say, the reasons for the different results from the three sets of experiments. However, they think the efficiency of silver iodide may be influenced by impurities, either in the smoke or in the atmosphere.

Science News Letter, February 16, 1952

● RADIO

Saturday, Feb. 23, 1952, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Norman Jolliffe, director of the bureau of nutrition of the Department of Health of the City of New York, discusses "Important Nutrition Problems in America."

BOTANY

Plant Stems Carry Medicine to Leaves

➤ THE STEMS of bean seedlings can absorb streptomycin and translocate it upward into the leaves within a week in sufficient amounts to suppress development of halo blight germs.

Scientists previously have reported that the roots of plants could do this, but this is the first time stems have been found capable of doing it.

The finding, by John W. Mitchell, William J. Zaumeyer and W. Powell Anderson of the U. S. Department of Agriculture, is reported in the journal SCIENCE (Feb. 1).

Science News Letter, February 16, 1952

BIOCHEMISTRY

Synthetic Vitamin B-6

➤ SYNTHETIC PRODUCTION for the first time of a B vitamin which may give scientists a chance to learn more about cancer and nutrition has been accomplished by Drs. Elbert A. Peterson, Herbert A. Sober and Alton Meister of the National Cancer Institute.

The vitamin is known as B-6. It is found in meats, cereals, and yeasts. The body needs it to make proper use of amino acids, building blocks of protein.

Included under the name of vitamin B-6 are three chemicals, pyridoxine, pyridoxal and pyridoxamine. But the body does not use these chemicals as such. It apparently converts them to a phosphate.

The phosphate form of pyridoxamine is what the National Cancer Institute chemists have now produced synthetically. Heretofore only crude, impure preparations of this chemical have been available.

Since cancer tissue has a very low level of vitamin B-6 and a different way of using amino acids from that of normal tissue, availability of the pure, synthetic pyridoxamine phosphate is expected to give science a new, useful tool for cancer research.

Method for producing this chemical, as officially reported to fellow scientists in the JOURNAL OF THE AMERICAN CHEMICAL SOCIETY (Jan. 20), starts with pyridoxamine, which has previously been prepared synthetically. This is reacted with anhydrous phosphoric acid. The resulting crude mixture is separated into its components by an ion exchange chromatographic column. With this method, the scientists are able to get the exact chemical, pyridoxamine phosphate, whereas previously when phosphate was added to pyridoxamine, they "never knew what they got," Dr. Meister put it.

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Cabbage seed sown directly in the field produces larger yields than seed planted in beds and the plants transplanted to the field.

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.

ACCULTURATION IN THE AMERICAS: Proceedings and Selected Papers of the XXIXth International Congress of Americanists—Sol Tax—*University of Chicago Press*, 339 p., illus., paper, $7.50. An anthropological analysis of the problems of mixtures of cultures originating in Europe, Africa and aboriginal America.

THE ACTION OF HORMONES IN PLANTS AND INVERTEBRATES—Kenneth V. Thimann, Ed.—*Academic Press*, 228 p., illus., $5.80. A separate publication of chapters from "The Hormones" which cannot be incorporated into Endocrinology.

ARCHAEOLOGICAL SURVEY IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY, 1940-1947—Philip Phillips, James A. Ford and James B. Griffin—*Peabody Museum*, 472 p., illus., paper, $8.50.

BIOLOGY OF THE WHITE CRAPPIE IN ILLINOIS—Donald F. Hansen—*Illinois Natural History Survey*, 54 p., illus., paper, free upon request to publisher, Urbana, Ill. Information important to anglers about the sport fish.

BIRDS FROM LIBERIA—With a Discussion of Barriers Between Upper and Lower Guinea Subspecies—Austin L. Rand—*Chicago Natural History Museum*, 92 p., paper, $1.00.

BUSINESS ORGANIZATION AND COMBINATION—Richard Norman Owens—*Prentice-Hall*, 4th ed., 562 p., $6.65. This new edition has been revised to take into account the changes in business organization due to the war.

THE CHEMISTRY OF LIGNIN—Friedrich Emil Brauns—*Academic Press*, 808 p., illus., $14.50. Bringing together the contents of the voluminous literature of the past 20 years in this country and abroad for use of chemists and students.

THE CHEMISTRY OF SYNTHETIC DYES, VOL. I—K. Venkataraman—*Academic Press*, 704 p., illus., $14.50. A chemist of Bombay, India, writes this comprehensive survey from the standpoint of modern organic chemistry.

COMMERCIAL AND SPORT FISHES OF THE MISSISSIPPI RIVER: Between Caruthersville, Missouri and Dubuque, Iowa—Paul G. Barnickol and William C. Starrett—*Illinois Natural History Survey*, 78 p., illus., paper, free upon request to publisher, Urbana, Ill.

COMPENDIUM OF METEOROLOGY—Thomas F. Malone, Ed.—*American Meteorological Society*, 1334 p., illus., $12.00. Articles by 102 authors, each article containing a separate bibliography. The work summarizes what is known about weather science.

THE COST OF SICKNESS AND THE PRICE OF HEALTH—C.-E. A. Winslow—*World Health Organization*, 106 p., paper, $1.50. "Prevention," it is concluded, "is not only better than cure, it is also cheaper."

DESCRIPTIONS OF AND KEY TO AMERICAN POTATO VARIETIES—C. F. Clark and P. M. Lombard—*Govt. Printing Office*, USDA Circular No. 741, 57 p., illus., paper, 60 cents. To aid the grower in correctly identifying his seed.

DETERMINATION OF PHENOLS IN AQUEOUS WASTES FROM COKE PLANTS—Joseph A. Shaw—*Mellon Institute*, 5 p., paper, free upon request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa. The delicacy of the method described in this reprint is about 20 parts per billion.

ELEMENTS OF CERAMICS—F. H. Norton—*Addison-Wesley*, 246 p., illus., $6.50. A technical book for use as a text in college classes.

ESTIMATION OF OXYGEN CONSUMING VALUE OF COKE-PLANT AQUEOUS WASTES—Joseph A. Shaw—*Mellon Institute*, 4 p., paper, free on request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

FACTS FROM FIGURES—M. J. Moroney—*Penguin*, 472 p., illus., paper, $1.25. Intended to make the general reader better able to understand statistics and not to be misled by them.

FINISHING MATERIALS AND METHODS—George A. Soderberg—*McKnight*, 320 p., illus., $4.00. A high-school text on wood and metal finishing.

THE FIRST BOOK OF SNAKES—John Hoke—*Franklin Watts*, 69 p., illus., $1.75. A delightful book telling how to recognize common snakes and something of their habits and the myths that are believed of them.

GEOLOGIC GUIDEBOOK OF THE SAN FRANCISCO BAY COUNTIES—Olaf P. Jenkins, Ed.—*California Division of Mines*, 392 p., illus., $2.50. Perhaps nowhere as much as in California has the wealth of natural resources shaped the trend of history.

HEREDITY IN UTERINE CANCER—Douglas P. Murphy—*Harvard University Press*, 128 p., $2.50. The results of this careful statistical study show that inheritance plays a part in cancer of the uterus.

HOW TO MAKE AN ATOMIC BOMB IN YOUR OWN KITCHEN (WELL, PRACTICALLY!)—Bob Hale—*Fell*, 191 p., $2.00. A breezy book about a serious subject.

THE HUMAN FRAME — Giovanna Lawford—*Duell*, and *Little, Brown*, 95 p., illus., $3.00. "Beauty," the author contends, "is more than skin-deep." This she demonstrates in these attractive drawings of bones.

ILLINOIS WILD FLOWERS—John Voss and Virginia S. Eifert—*Illinois State Museum*, 256 p., illus., paper, $2.25. A lovely collection of photographs of representative wild flowers arranged according to season from the early opening skunk cabbage to the late-blooming New England aster.

JOINT, CRACK, AND UNDERSEALING MATERIALS—Annotated by C. W. Lovell, Jr.—*Highway Research Board*, 22 p., paper, 45 cents. An annotated bibliography.

LATE DEVONIAN FRESH-WATER FISHES FROM THE WESTERN UNITED STATES—Robert H. Denison—*Chicago Natural History Museum*, 40 p., illus., paper, 75 cents.

MODERN TRENDS IN PHYSIOLOGY AND BIOCHEMISTRY: Woods Hole Lectures Dedicated to the Memory of Leonor Michaelis—E. S. Guzman Barron, Ed.—*Academic Press*, 538 p., illus., $8.50. Lectures delivered at seminars intended to celebrate the 75th birthday of Prof. Michaelis, but which became a memorial to his memory.

A NEW SPECIES OF ANT-BIRD (PHLEGOPSIS) FROM COLOMBIA—Rodolphe Meyer de Schauensee—*Academy of Natural Sciences of Philadelphia*, 3 p., paper, 25 cents.

NUTTALL'S TRAVELS INTO THE OLD NORTHWEST: An Unpublished 1810 Diary—Jeannette E. Graustein, Ed.—*Chronica Botanica*, 86 p., illus., paper, $3.00. Nineteenth century America seen through the eyes of a famous naturalist.

PHARMACEUTICAL PREPARATIONS—George E. Crossen and Karl J. Goldner—*Lea & Febiger*, 3d ed., 265 p., $4.00. A carefully revised edition of this text for pharmacy students.

PLANE TABLE MAPPING—Julian W. Low—*Harper*, 365 p., illus., $5.00. This practical volume was the outgrowth of a company manual written for the California Company.

PRIMER OF ATOMIC ENERGY—John Lewellen—*Science Research Associates*, 48 p., illus., paper, 40 cents. Information for young people about the atomic bomb as well as the peaceful uses for atomic energy.

PRINCIPLES OF PLANT PHYSIOLOGY—James Bonner and Arthur W. Galston—*Freeman*, 499 p., illus., $5.50. An elementary text.

RADIATION AND MONITORING FUNDAMENTALS FOR THE FIRE SERVICE: Nuclear Theory, Atomic Explosion Effects, Monitoring Instrumentation, Protective Safeguards—*International Association of Fire Chiefs*, 42 p., illus., paper, 75 cents. Telling the fire fighter what he needs to know in order to understand the hazards and reduce the devastation of an atomic attack.

ARCHAEOLOGY

Venezuelan Bat God

➤ BLACK WINGS of the bat god hovered over America's ancient civilization in Venezuela.

The significant part this deity played before white men first came to the New World is revealed from study of over 2,000 artifacts, stone tools, and fragments of pottery, just received by the Smithsonian Institution from Col. Berkeley R. Lewis. The specimens were gathered while Col. Lewis was a member of a military mission in Venezuela.

The Lewis collection, which includes artifacts from sites along the Orinoco, the Venezuelan North Coast, the shores of Lake Valencia and the Andean regions of Trujillo and Lara, as well as many other sites, shows that throughout Venezuela many different aboriginal groups thrived. In much dry, uncultivated land, large amounts of pottery are found suggesting aboriginal village sites of some size, whose people made a living by irrigation agriculture.

Dr. Clifford Evans, of the U. S. National Museum staff, indicates that one of the most important points shown is the great regional specialization of cultures, each with different traits, employing unrelated art motifs, and making pottery of different shapes. Some of the materials received in the Lewis collection are from regions heretofore unrepresented in American collections.

Compared to Peruvian archaeology, little is known about the ancient Venezuelans. Their artifacts show that they evidently were quite an energetic and artistic people with a complex society, who made contacts in every direction and who were quick to grasp new ideas, but did not develop anything like the high civilizations of the Mayas and Incas.

In spite of certain features of the pottery, such as tripod bowls and polychrome painting, showing exchange of ideas with Central America, much of these aboriginal Venezuelan culture traits are unique, the result of the local development of the aboriginal inhabitants.

A bat god seems to have played a prominent part in their lives. The figure appears, in highly stylized form, in their pottery, their stone carving, and shell work.

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On This Week's Cover

➤ PHILLY, THE baby Grevy's Zebra and the first of her kind to be born in the Philadelphia Zoo, is shown with her mother on the cover of this week's SCIENCE NEWS LETTER. Like most hoofed animals she was walking around under her own power within just a few hours after birth.

Grevy's is the largest and most handsome species of the zebras. It was named in honor of M. Paul Jules Grevy, who served as President of France from 1879 to 1887.

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Books of the Week

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RADIO AND TELEVISION RECEIVER TROUBLESHOOTING AND REPAIR—Alfred A. Ghirardi and J. Richard Johnson—*Rinehart*, 822 p., illus., $6.75. Giving the service technician practical troubleshooting procedures.

RANGE MANAGEMENT: Principles and Practices—Arthur W. Sampson—*Wiley*, 570 p., illus., $7.50. Useful to stockmen and range administrators as well as to students.

REPORT ON THE PACIFIC SCIENCE ASSOCIATION—Secretariat of the Pacific Science Council—*Bernice P. Bishop Museum*, Special Publication 41, 115 p., paper, free upon request to author, care of the publisher, Honolulu 17, Hawii, by those whose field of work is in the Pacific.

A REVISION OF THE NORTH AMERICAN AND EUROPEAN STAPHYLINID BEETLES OF THE SUBTRIBE GYROPHAENAE (ALEOCHARINAE, BOLITOCHARINI)—Charles H. Seevers—*Chicago Natural History Museum*, 105 p., illus., paper, $1.25.

SEPTIC TANKS—THEIR USE IN SEWAGE DISPOSAL—*Housing and Home Finance Agency*, 16 p., illus., paper, 15 cents. Some 17,000,000 persons in the United States must use septic tanks. This is a report summarizing results of a program of research to improve such systems.

THEORETICAL PETROLOGY: A Textbook on the Origin and the Evolution of Rocks—Tom F. W. Barth—*Wiley*, 387 p., illus., $6.50. "Petrology," the author points out, "has become physico-chemistry applied to the crust of the earth."

THE TRUTH ABOUT SNAKE STORIES—Karl P. Schmidt—*Chicago Natural History Museum*, 22 p., illus., paper, 20 cents. If you believe that the milk snake steals milk from Bossie, that the hoop snake takes his tail in his mouth and rolls along or that the mother snake swallows her young for their protection, then you will want to read the truth about these yarns.

UNDERSTANDING YOUR MIGRAINE HEADACHE—Caro W. Lippman and Margaret Lippman—*Greenberg*, 150 p., $2.50. This writing team consists of a physician and his wife who suffers from migraine.

WILD WINGS—Frank S. Stuart—*McGraw-Hill*, 222 p., $3.50. Presenting the beauty of wild ducks on the wing in their migratory flights.

WOOD TECHNOLOGY: Constitution, Properties and Uses—Harry Donald Tiemann—*Pitman*, 3d ed., 396 p., illus., $6.00. Of interest to all of us who use wood.

THE ZOOLOGY OF TAPEWORMS—Robert A. Wardle and James Archie McLeod—*University of Minnesota Press*, 780 p., illus., $12.50. Describing these parasites of man, livestock, game animals, birds, and fishes. Includes a bibliography.

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• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 609. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

LIGHTED NAMEPLATE and push-button for the household door contains a tiny electric bulb that stays lit at all times but requires only perhaps a penny's worth of electricity a month. Name plate and bulb are encased in a weather-resisting plastic with the light shining directly on the name.

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SEWING CARDS for little girls permit the youngster to sew clothes onto life-like figures. Clothes and the dolls onto which they are sewn, are cardboard cut-outs with pre-punched holes. Yarn used for sewing has shoe-lace tips, eliminating the need for dangerous needles.

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DE-ICING SYSTEM for helicopter rotor blades, developed by the U. S. Navy, is an electric heating system with wires embedded in a rubber-like material stretched along the entire length of the blades. With this de-icing system the helicopter becomes a craft of far greater usefulness.

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UNDERCOAT FOR surfaces to be lacquered or enameled will make possible a more wide-spread use of fir and other open-grained woods because it has superior filling properties and ability to hold down the grain of the wood. Also it prevents a glossy finish from sinking in.

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FLOOR FAN and coffee table in combination uses an improved type of horizontal fan that blows air directly upward and

then outward. As shown in the photograph, it has a 22-inch round table top for an upper surface. Five curved rings enclosing the fan aid air circulation and also keep the fingers of children away from the whirling blades.

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WALLPAPER BRUSHES with durable fibers of Bakelite styrene make it simple to smooth paper and glue flat against the wall. Easily cleaned by dipping in warm suds, the brushes are resistant to chemicals and outlast ordinary ones five to one, it is claimed.

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TOW-TARGET, a 30-foot long and 6-foot wide banner to drag behind a speedy airplane to give antiaircraft gunners practice shooting, is made of the plastic material known as polyethylene. This improved tow-target withstands the high speed and cold encountered high in the air.

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ADHESIVE TAPE, which will stick to any clean smooth surface without wetting, is particularly useful for labels in warerooms and laboratories because it can be written on with pencil or stylus. The writing is actually done on a carbon surface between two layers of an acetate.

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Do You Know?

The principal income of commercial *Angora goat* ranching is from the sale of mohair, a textile fiber in steady demand.

Tapioca, popular thickening for fruit pies, soups and puddings, is made from the roots of the cassava plant, a native of tropical America but now widely grown in southeastern Asia.

The scimitar-horned oryx, an antelope of southeastern Arabia, may have given rise to the legend of the *unicorn* because its horns, when seen in profile, appear as one.

Americans donated 1,225,000 pints of *blood* through the Red Cross to the military forces in the first 18 months following the start of the war in Korea.